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David Spurns Top AEC Post, Quits Administration

It was an offer he could easily refuse—reassignment from the sinking White House science office to the chairmanship of an Atomic Energy Commission slated for dismemberment—that inspired the surprise resignation earlier this month of Presidential Science Adviser Edward E. David, Jr.

From sources in and around the administration, SGR has learned the following about the circumstances that led to his departure:

Over David's protests, but with the cooperation that regularly characterized his team-player concept of the job, the administration has been planning to revamp the role of the Office of Science and Technology (OST), of which David is director, and subordinate it to the Office of Management and Budget (OMB). In addition, a death warrant is said to be impending for the President's Science Advisory Committee (PSAC), the parttime, high-council of science and technology, which in effect serves as adviser to the presidential adviser (See R.I.P., p. 3). In both cases, Nixon's inner circle, which David never penetrated in his 28 months on the job, is yet to arrive at a final plan—which is more a reflection of the low priority accorded the subject than any intrinsic difficulty in settling the matter. But there is no doubt that the thrust is toward lessening the scientific presence that was formally installed in the White House immediately following Sputnik, and that has remained there ever since. Nevertheless, as recently as six weeks ago, David was privately expressing confidence that Nixon and his henchmen could be persuaded of the utility of high-level scientific advice close at hand, and that OST, under one label or another, would emerge essentially intact, with perhaps even some "managerial" responsibilities for national research programs.

With David gently signalling that he had no intention of presiding over a diminished OST or

fragment thereof, the administration, early in December, raised the question of him taking the AEC chairmanship that was vacated when James Schlesinger was selected to become director of the CIA. In a conversation with Nixon, David said that he would be interested in the job if the AEC were to become the focus of the government-wide energy program that the administration is planning. Nixon indicated, however, that while the AEC civilian power programs are to be included in the amalgamation of government energy activities—wherever that might eventually be located administratively—there was no intention of letting the AEC become kingpin of the new organization.

(Continued on page 2)

In Brief

Locked in the safe of the Office of Science and Technology are 10 US government checks totaling \$500,000, the award money for the Presidential Prizes for Innovation that the White House announced last spring would be awarded Sept. 15. OST staffers say the checks have been there for months but that Nixon's staff shows no interest in going ahead with the award ceremony. Names of the winners have not been announced ... Ed David's resignation is likely to create a further delay in implementation of the Soviet-American agreement to establish a Joint Commission to ride herd on scientific and technical cooperation between the two countries, since David chaired the American side of the Commission. The first meeting, originally scheduled for October, was postponed at the last minute to December, and then was postponed again without a new date being set ... Prominently mentioned as a candidate to succeed John S. Foster, Jr., director of defense research and engineering, is Allen M. Peterson, professor of applied mechanical and electrical engineering at Stanford ... Comment of top OMB official on the "reorganization" of the Executive Office: "There's blood all over the carpet, and there's no telling what's going to be left." ... Among the few high-level officials from whom resignations were not demanded: NSF Director H. Guyford Stever, who holds a statutory six-year term ... Said to be a key figure in planning the science reorganization, Kenneth Dam, a former OMB official who is deputy assistant to Treasury Secretary George P. Shultz in Shultz's newly assigned capacity of assistant to the President for economic affairs.

Sound of the Times

Dial the number listed in the Washington telephone directory for the National Science Foundation personnel office (632-4100) and you hear the following recording:

"Thank you for calling the National Science Foundation job information list. Due to the recent freeze on hiring and promotion imposed by the President, our job listing is temporarily suspended. The service will be resumed when the freeze is lifted."

Text of Nixon's Statement on David's Resignation

The following is excerpted from the White House announcement of Edward E. David's resignation as science adviser to President Nixon:

The President accepts with deep regret and much gratitude the resignation of Dr. David, science adviser to the President and director of the Office of Science and Technology. In his letter to the President, Dr. David noted the great progress which has been made in turning the scientific and technological resources of the nation to the benefit of our society. He noted the President's initiatives in fostering alliances in both domestic and international science.

The President expressed his gratitude for the contribution that Dr. David has made toward these achievements and said that his key role in maintaining America's scientific and technological leadership has brought him the highest distinction . . .

DAVID (Continued from page 1)

Minus its civilian power programs, of course, the AEC would be little more than a nuclear weapons supply agency for the Defense Department. David thought it over and then in mid-December, he wrote the President that he wished to depart from government service.

On January 2, he called his staff together to announce that he was departing to become executive vice president of Gould, Inc., a \$500-million-a-year Chicago-based manufacturing firm which David described as "ambitious in both high-technology and work-a-day technology." The announcement came as a complete surprise, and was immediately followed by David's departure for Chicago, where a few hours later his secretary was answering the telephone, "Dr. David's office." Even then, David abided by the requirements of presidential protocol, which gives the White House first crack at news concerning the Chief Executive and his entourage. Though the *Washington Star-News* carried word of his departure a few hours after he announced it to his staff, David refused to make any comment until the White House issued a formal announcement the following morning, and even then he uttered nothing but kindnesses for the administration.

The truth of the matter is that he was the right man—not uniquely so, but nevertheless well-equipped for the job—who arrived to serve the wrong man, and ended up in a role equivalent to being bartender to a teetotaler. Nixon never cared much for the scientific crowd with its liberal leanings, academic orientation, and commitment

to arms control. If Nixon had been starting from scratch, it is doubtful that he would have established a high-level scientific post in the White House. It just happened to be there when he arrived in office, and his first choice for the job, Lee DuBridge, retired president of Caltech and science adviser under Eisenhower, simply furthered Nixon's indifference to the role.

The job might have lapsed after DuBridge incurred the wrath of the White House staff for several political gaffes, notably the designation for high appointments of scientists who had crossed the administration on sensitive issues such as arms control and Vietnam. But then Bell Labs Vice President William O. Baker, who has long had magical entry to the most inner White House circles, strongly urged that the post be maintained, and recommended the appointment of one of his proteges, David, an electronics engineer and psychologist who had spent 20 years with Bell and was executive director of its communications research division.

With the elders of PSAC looking on, David took the oath of office on a sunny September afternoon in the White House rose garden, with Nixon twice telling the assemblage that "Dr. David is a very practical man." Undoubtedly he is, but he never came to rate very high with the public relations men, stockbrokers, and advertising executives who make up Nixon's inner circle. And, to the chagrin of old PSAC hands, many of them holdovers from Lyndon Johnson's days, even Henry Kissinger chose to ignore OST's and PSAC's traditional role in arms control thinking by meeting periodically with his own little scientific bairntrust, a little-known group that included Paul Doty, professor of chemistry at Harvard.

However, the ultimate humiliation came with the celebrated Magruder affair, when, with no warning, the White House announced that William Magruder, former chief of the government's SST program, had been appointed a special counselor to the President to explore new technological opportunities for domestic social programs and export industries. Inquiries naturally centered on why the assignment had not been given to OST, but no plausible explanation was forthcoming, since the White House was not disposed to confess that it had little regard for OST.

David and OST weathered the technological opportunities episode simply because Magruder, inspired by a heady charge to think big, went on to think altogether too big for the budgeteers who staff OMB. But after that, the course was essentially downhill for both David and the complex of advisory services that he headed. He left office publicly denying that he felt "any sense of disappointment," and citing the increase that had occurred in spending on "domestic" research, the role that he and his office had played in developing

(Continued on page 3)

Science Office, Science Committee - R.I.P.?

The departure of Science Adviser David, along with the previously announced resignation of his deputy, John D. Baldeschieler, comes on top of the resignations requested from the President's Science Advisory Committee (PSAC), and until the White House reveals how, if at all, it intends to act in this area, wipes out a carefully constructed science advisory apparatus that dates back to 1957.

PSAC, of course, could be told to come back to work for its routine schedule of two days a month in Washington, but the odds are not considered particularly good, since PSAC, consisting of 18-20 brainy people drawn from outside of government, represented the institutionalization of independent thought deep inside the White House. And, if there is anything that Nixon and his crew are seeking to avoid, it is contact with people who decline to sing their tune.

Founded in the Eisenhower administration, and mainly serving then as a counter to the military services' quest to duplicate each other's rush into expensive missile systems, PSAC has generally performed out of public view. But now and then it has either published the results of its deliberations or they have leaked out in one way or another. Early in the 1960s it warned of the danger of uncontrolled use of pesticides, thus incurring the wrath of the Department of Agriculture and its congressional friends. A few years later, it proclaimed airport noise a serious problem, and urged that aircraft designs be aimed toward noise reduction. That brought on the ire of the aircraft industry and its friends. It was PSAC member

Richard Garwin, of IBM, who studied the SST for the White House science office, and concluded that it was an extremely bad bargain, which was bad enough in the view of the Nixon administration, then struggling to win congressional approval for the project. But when Garwin publicly stated his views at the height of the SST battle, the Nixon gang was infuriated and came to regard the "science bunch" as a monster on the premises.

As for the PSAC membership, its disillusionment with the Nixon administration set in early when Lee DuBridge, who chaired the committee in his role of science adviser to the President, suggested that its proper role was to support the administration rather than illuminate problems with independent advice. After that, PSAC members justifiably held serious doubts about the utility of their presence. David sought to mend matters by gradually replacing PSAC's traditional academic flavor with scientists drawn from industry and from parts of the political spectrum other than the left-liberal Cambridge, Mass., group that had dominated the committee from its early days. But PSAC never achieved credibility with Nixon or his closest advisers.

In past post-election meetings, the membership went through the process of submitting *pro forma* resignations, but when these were requested at the last session, Dec. 18-19, it was generally felt that this time it was for real. The two-day meetings are normally held during the third week of each month, but, at this writing, there is no indication that a January meeting is planned.

DAVID (Continued from page 2)

cooperative research programs with the Soviet Union, and the creation of a framework for coordinating national energy research programs. And, in announcing his departure, the White House press office noted that the President—who often is not notably gracious concerning those who depart his service—said that David's "key role in maintaining America's scientific and technical leadership has brought him the highest distinction."

It has ended like a mutually agreed upon divorce—nevertheless a divorce. David meanwhile continues to take a "constructive" view of his 28 months as science adviser to a President who displayed little interest in science, technology, and related activities. If David feels any disappointment or bitterness, it is well concealed, though on one occasion, he did display a trace of non-euphoria concerning the administration. When it was observed in his presence that Nixon had humiliated Henry Kissinger by resuming the bombing of North Vietnam after Kissinger had proclaimed the immi-

nence of peace, David responded, "So, what's new? The only difference is that now it's Henry's turn."—D.S.G.

Quick Cure for Pollution?

Lewis M. Branscomb, former director of the National Bureau of Standards, has a sure-fire way to solve the automobile pollution problem.

He suggests "a law that all automobile engine exhausts must be discharged into the passenger compartment. Then the owner would have the exclusive benefit (and cost) of the pollution, and he would soon either take up walking or pay what it takes for an automotive technology that produces nice smelling exhaust of no toxicity or no exhaust at all."

Henry Ford III had earlier been quoted in the press as suggesting a similar solution for water pollution: let every factory's water intake pipe be located down stream from its discharge pipe.

Nixon's Technology Effort Called a "Sham"

Last March the White House issued the first Presidential Message on Science and Technology in the nation's history. The message called for "a strong new effort to marshal science and technology" in the solution of domestic problems, and it sketched various ways in which more than \$700 million in new money would be applied to civilian R&D programs. The two major goals of the program were said to be "strengthening our economy" and "improving the quality of life."

But how goes the program in the wake of the Nixon administration's decision to tighten its budgetary belt so as to hold federal spending below \$250 billion in the current fiscal year? The answer, according to Lewis M. Branscomb, former director of the National Bureau of Standards, is "very disappointing."

At NBS, Branscomb said, the Nixon budget makers have allowed funding for only one new program—the Experimental Technology Incentives Program (ETIP), a cornerstone of the whole Nixon technology effort—and even there the funding will be considerably below the amount appropriated by Congress. Meanwhile, existing but politically unglamorous programs aimed at essentially the same goals have been drastically slowed and other new programs have been aborted. "If this situation is not remedied, it will make a sham out of the President's first R&D message to Congress in history," Branscomb said. "It is very disappointing to see a pattern of successful work in support of economic development and public protection, welcomed by the industrial R&D community, turned off and replaced by a speculative program whose basis for usefulness is still to be established."

Branscomb, who left NBS in May to become vice president and chief scientist of IBM, issued his critique during a speech at the annual meeting of the American Association for the Advancement of Science, held in Washington, D.C. in late December. Branscomb stressed that he was speaking as "a scientist and private citizen," not on behalf of NBS or IBM, but his remarks clearly reflected the frustration of a government bureau chief who had won a substantial funding increase for NBS from Congress only to see most of the money impounded at the last moment by the Nixon economy drive. (A more sanguine view of the Nixon technology effort is expressed by top officials of the National Science Foundation, where the budget stringencies are painful but perhaps not as frustrating as the unexpected turn of fortunes at NBS. (see "Damn Healthy Step," page 5).

Before the recent economy drive, NBS had been awarded the largest budget increase in its history. In fiscal 1972, the Bureau's appropriations totalled \$50 million. For fiscal 1973, the current year, the

Nixon Administration originally requested \$79 million, an amount which was pared back to \$72 million by Congress. That still left NBS with a hefty \$22 million increase, a jump of 44 per cent over the previous year. About half of the increase was to support the new glamor program, ETIP, while the remainder was for a variety of ongoing and beginning programs that were supposed to "attack national problems of unusual magnitude," including a decline in productivity, pollution, and public safety.

But the new money for these latter programs has largely been impounded by the White House Office of Management and Budget. Although Congress appropriated an increase of some \$11 million for these programs, OMB has told the Bureau it can only spend about \$875,000 of this—less than 10 per cent of the increase appropriated. And while OMB could always change its mind later in the year, NBS officials believe the money is effectively lost.

Meanwhile, ETIP, which is the Bureau's portion of a program that also involves NSF, has fared somewhat better. The Nixon Administration originally requested \$14.4 million for ETIP in fiscal 1973, Congress appropriated \$10.8 million, and OMB seems to have settled on \$7 million. That's about half of the amount originally proposed, but NBS officials believe it is enough to get a sensible program started.

The ETIP program, which is still in the planning stages, will conduct experiments to determine the best ways of encouraging private investment in R&D and effective use of R&D. Contracts will be made with industrial firms, trade associations, government laboratories and other research organizations to explore such possibilities as: new forms of assistance to inventors and small innovative firms; licensing of government patents for commercial exploitation; formation of research associations in fragmented industries; and better procedures for learning about foreign technological developments. The private sector is expected to contribute heavily to support of these experiments.

Although Branscomb stopped short of condemning this effort, he said he was "uncomfortable with the ETIP program as many conceive it: that the way to approach the identification and removal of barriers to innovation is through contractual relationships with single companies for the conduct of commercial research and development." He found it "hard to imagine that decisive results will flow from government funded development" unless the government becomes the customer for the resulting product. And he warned of the "political problem" involved in trying to help a particular company solve its problems. Thus Branscomb

(Continued on page 5)

NSF Calls Nixon Plan "Damned Healthy Step"

The Nixon administration's program to spur technological initiatives may look like a "sham" from the vantage point of the National Bureau of Standards, but it is held in higher esteem at the National Science Foundation.

The two agencies are partners in one of the major parts of the Nixon program—an effort to find ways of stimulating innovation. At NSF the effort is known as the Experimental R&D Incentives Program; at NBS it is called the Experimental Technology Incentives Program.

Although Lewis M. Branscomb, former director of NBS, has suggested that the incentives program may be counterproductive in the sense that it is sucking away money from programs of proven value to industrial technology (see "Sham," p. 4), Raymond L. Bisplinghoff, deputy director of NSF, strongly disagrees. "I don't regard it as a sham," he told SGR. "It's a damn healthy step."

Bisplinghoff predicted that "the leading science policy questions of the 1970s" will be aimed at putting R&D to work on domestic problems. He said the present R&D structure was designed to meet military, space and atomic energy objectives and is not well suited to spur industrial and civilian technology. Thus the incentives program is "ex-

tremely important," he said, because it may produce the information needed to devise a national strategy. The program will support studies to identify barriers to innovation as well as experiments to test incentives that might overcome those barriers. "Nobody knows how to do it," he said. "It's a breath of fresh air to see the government try to learn how to do something before it plunges in. I'm very optimistic about the chances for success."

Part of Bisplinghoff's buoyancy may stem from the fact that NSF's programs are getting more funding than their counterpart at NBS. The Nixon administration had originally requested \$24.5 million for NSF's incentives program and a related R&D assessment program in fiscal 1973. As a result of decisions made by Congress and by OMB, the Foundation now expects to have \$18.5 million for the incentives program and \$2 million for the assessments—almost three times the \$7 million total that has been released to NBS.

Bisplinghoff said that, while NSF is experiencing budget stringencies in some programs, he regards the incentives program as "a real addition to our budget" rather than as a competitive threat that is sucking off money from other worthwhile programs.

NIXON'S TECHNOLOGY EFFORT

(Cont'd from p.4)

concluded that the government should concentrate, not on direct financial assistance to commercial companies, but on efforts "to improve the knowledge environment on which all companies must draw."

"I feel sure," he said, "that the economic leverage of programs aimed at improving the environment for innovation in building, setting performance specifications for fire and police technologies, providing tools for quality control in clinical chemistry, generating test methods for materials failure avoidance, just to name a few, far outweigh the value of most of the unsolicited proposals for ETIP received when I was still at NBS."

Yet it is precisely these programs aimed at enhancing the knowledge environment which are being slowed or gutted while ETIP goes forward. A list of the major NBS programs that have been blocked by OMB would include:

Neutron Standards. This was to have been an essentially new program, under which NBS would devise national standards for measuring neutron emissions. The standards were supposed to facilitate safe, economic development of the fast breeder reactor and safe use of radiation therapy for health care, including treatment of tumors. Although Congress appropriated more than

\$400,000 for this program, OMB has impounded it all, leaving the program to survive on whatever money can be reprogrammed internally by NBS.

Standard Reference Materials. NBS certifies and sells more than 800 different types of authoritatively characterized materials for use in analytical and clinical laboratories and in industrial process control. Congress had approved an increase of roughly \$500,000 (from a base of about \$1 million), but OMB has impounded the entire increase. A large chunk of the money would have been used to certify complex clinical materials, such as steroids, enzymes, and proteins, for use in medical laboratories.

Computer science and technology. This is an ongoing program which seeks to improve the economy and efficiency of computer use, particularly within the federal government. Funded at a level of \$2.3 million in fiscal 1972, it had been scheduled for a hefty \$1 million jump in fiscal 1973 until OMB impounded the entire increase.

Cryogenic Electrical Power. A new initiative, under which NBS would have received \$1 million to plan a five-year program to assist industry in developing a superconducting generator, has been aborted. In addition to budget stringencies, there were second thoughts as to whether NBS should get involved in direct funding of a commercial prototype.

(Continued on page 6)

Academy Discharges Computer Board

The Computer Science and Engineering Board of the National Academy of Sciences has been quietly shut down because of dissatisfaction with the quality of its work.

The board, which was founded in 1968, had conducted studies affecting government, industry and universities. It prepared reports on computer export policy; the problems associated with attaching non-network devices to the telephone network; the use of information technologies by universities and libraries; and the computer's impact on personal privacy and civil liberties, among other studies.

But there has been increasing dissatisfaction, both at the Academy and in the funding agencies, with much of the board's work. Academy President Philip B. Handler reports that the board has been told to close down operations and to abandon two projects that had been accepted but not yet actually started. Handler said the action was taken because the board's output has been considered "not entirely worthy" and because of doubts about the quality of its management. "It's a strange job shop," he added. "It isn't clear to me that there's a real major need for them."

Anthony G. Oettinger, of Harvard, who chaired the board, expressed mystification about the reasons for the demise. He said the board had financial problems, particularly when the Pentagon's Advanced Research Projects Agency, which

had been the mainstay of the board's support from 1968 until 1971, cut off the dollar spigot. He speculated that some of the board's reports might have "offended all sorts of people," and he acknowledged that "we screwed up a couple of early studies" which "mercifully were never published . . . We picked the wrong guys and they ended up grinding their own axe."

But Oettinger detected irony in the fact that the Academy's newsletter for December had given page-one display to the board's recent report on *Databanks in a Free Society*. "Here, while my throat was being cut, we are pointed to with pride," Oettinger said. "There's a certain inconsistency in all of this."

A contributing factor in the board's demise may have been an incident in which Oettinger signed Handler's name to a contract-extension proposal submitted to ARPA. Oettinger said he took the action in front of several witnesses and immediately wrote Handler a letter explaining that he had signed Handler's name because none of the Academy leaders were in town and the proposal had to be submitted by an imminent deadline. Although Oettinger considered his action "a perfectly routine exercise of managerial initiative," the Academy leaders felt he had exceeded his authority. "It caused a ruckus," Oettinger acknowledged. "I was accused of all sorts of horrible things."

NIXON'S TECHNOLOGY EFFORT

(Cont'd from p.5)

Radiation Safety. An essentially new program, under which NBS would have developed accurate measurement techniques for laser radiation and would have sought instruments and methods for measuring various kinds of radiation to which workers and the general public are exposed, has been aborted. It was to have received roughly \$400,000 until OMB impounded the funds.

NBS Equipment Inventory. A five-year program to modernize and replace obsolete equipment at the Bureau has been deferred. NBS had been spending about \$1.5 million a year on new equipment, considerably less, on a percentage of budget basis, than comparable industrial laboratories. The Bureau had been expecting to spend about \$3 million additional in each of the next five years to upgrade its equipment, but OMB has impounded the entire increase for fiscal 1973.

Except for ETIP, the only programs allowed a

budget increase in fiscal 1973 involve fire research and pollution. The fire research and safety program, which had been funded at a level of about \$1.2 million and was scheduled for a hefty increase of \$1.6 million, will have to settle for an increase in the neighborhood of \$225,000. Similarly, a pollution abatement program aimed at developing measurement techniques and standards for air, water and noise pollution, was scheduled for an increase of \$1 million but will now have to settle for perhaps \$650,000.

It would probably be wise to apply a discount to Branscomb's lament, for he spoke from the perspective of a former agency head whose favorite programs have been gutted. But if the result of Nixon's spending ceiling is that the Bureau's traditional role of assisting industry by expanding the knowledge base is hobbled while a chancy but glamorous new program receives modest funding, then Nixon's new technology effort may well turn out counter-productive.—PMB

Notes on the New Congress: Proxmire, OTA and S.32

Proxmire and R&D Spending. Newly arrived in the chairmanship of the appropriations subcommittee for Housing and Urban Development, Space and Science, Sen. William Proxmire (D-Wisc.) is vowing intense surveillance over his jurisdiction, which, besides HUD and NASA, includes NSF and the Veterans Administration. Proxmire, who succeeded to the post in a series of chairmanship shifts that followed the death last fall of Sen. Allen J. Ellender (D-La.), has assigned members of his office staff to plumb the intricacies of the agencies within his jurisdiction in preparation for hearings on the FY 1974 budget. The staffer handling NSF is Thomas van der Voort, who invites communications from members of the scientific community, particularly regarding NSF's program of Research Applied to National Needs and the relationship between project and institutional financial support. Address: Office of Senator Proxmire, Room 2311, Dirksen Bldg., Washington, D.C. 20510.

Office of Technology Assessment. Rep. Olin E. Teague (D-Tex.), new chairman of the House Science and Astronautics Committee, is a sureshot for the House vacancy on the congressional board that presides over the newly created Office of Technology Assessment, replacing Earle Cabell (D-Tex.), who was defeated in the last election. Sen. Clifford Case (R-N.J.) has been appointed to fill the vacancy created by the defeat of Sen. Gordon Allott (R-Colo.). An early startup for the OTA now seems less likely than ever, since no source of funds seems available outside of the supplemental appropriation bill that comes up around late April. But Sen. Kennedy, who has become the key figure in OTA affairs, (he's just been appointed chairman of the board), is still

looking hard.

Science Policy and Priorities Act (S.32). Passed, 70-8, by the Senate last fall, Senator Kennedy's long-gestating bill to boost domestic research returns to Go in the new Congress because of the House's failure to act. There'll probably be a few days of hearings before Kennedy's Labor and Public Welfare science committee in a month or so, with repeat success in the Senate almost sure to follow. The House prospects, however, remain obscure, since Chairman Teague, of the Science and Astronautics Committee, which has jurisdiction over the bill, is yet to reveal his attitude, and hearings that were held in the last Congress by the House subcommittee on science, research, and development were on a bill that contains only some portions of Kennedy's design.

Kennedy's staffers acknowledge that NSF may not be the proper setting for a massive expansion of "domestic" research—which is the assignment it's given in the bill—but the Senator's subcommittee does not hold jurisdiction over any other possible prospect, such as NASA or the National Bureau of Standards (NBS). Other Senate committees would get the bill if either of those were designated, and if an entirely new organization were proposed, the assignment would go to Government Operations.

One possibility is that the House Science and Astronautics Committee, which has jurisdiction over NBS, would report out a bill enlarging the role of that agency, and then Kennedy's Senate subcommittee could accept the change in conference. But everyone involved agrees that the prospects for success with that maneuver are slim.

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Grantees May Face Cutback Problem

The Nixon administration's decision to hold spending below \$250 billion in the current fiscal year may aggravate the so-called "dropout problem" which has emerged in recent years as mission agencies have been cutting back their support of basic research. In Washington bureaucratese, a dropout is not a student who voluntarily quits school; he is a scientist who involuntarily loses his research grant, not because he is no longer productive, but because the funding agency has redefined its program in such a way that the scientist's work is no longer "relevant."

The dropout problem was most apparent in fiscal years 1971 and 1972. Some analysts trace the problem primarily to the Mansfield Amendment, a provision which was added to the military appropriations acts of 1970 and 1971 and which required that research supported by the military be rather explicitly related to military needs. However, the Pentagon contends that it cut only \$8.2 million worth of research because of the Mansfield amendment, and Edward P. Todd, NSF's deputy assistant director for research, agrees that the Mansfield amendment was "an incident, not a major causative factor" in bringing about the dropout problem. The more important cause, according to Todd, was that many agencies, not merely DOD, received budget cuts and hence tightened up their definitions of what research was relevant to their missions.

NSF has identified more than \$100 million worth of research projects that became dropouts in

fiscal years 1970, 1971, and 1972. The science agency received special appropriations totalling \$49.25 million to allow it to absorb some of these dropped projects, but that enabled NSF to pick up only about half of the dropouts. Federal science officials are uncertain just what happened to the remainder; some may have been picked up by agencies other than the one which dropped them.

The Defense Department was the largest single source of dropouts, accounting for perhaps 55 to 60 per cent of the dollar total. The AEC was responsible for perhaps 20 to 25 per cent, while HEW accounted for perhaps 10 per cent and NASA for roughly 8 per cent. The disciplines which suffered the greatest dollar loss were engineering sciences, physics, biological sciences, materials research, chemistry, atmospheric sciences, and computer sciences, in that order.

The figures cited above do not include certain major activities that were transferred from DOD to NSF funding, notably 12 university-based materials research laboratories, the National Magnet Laboratory at MIT, and logistics support for the Antarctic research program.

NSF's budget for fiscal 1973, the current year, included no special funds for dropouts because it provided an overall boost in funds for support of research at the universities. But uncertainties over how much NSF will be allowed to spend, and over how the mission agencies will allocate their spending allowances, make it difficult to predict what the net total of dropouts will be this year.

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